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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,120	02/05/2004	Igor A. Luzinov	CXU-383	3254

22827 7590 05/18/2005

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EXAMINER	
JACKSON, MONIQUE R	

ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/773,120	LUZINOV ET AL.	
	Examiner	Art Unit	
	Monique R Jackson	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed 2/7/05 has been entered. Claims 28-48 have been canceled. Claims 1-27 are pending in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Filippou et al (USPN 6,706,320) for the reasons recited in the prior office action and restated below wherein the Examiner takes the position that the modified substrate taught by Filippou et al is equivalent to "the substrate [comprising] functional groups that are reactive with epoxy" of the instant invention considering the instant invention does not exclude adding the functional groups to the substrate surface via an initial reaction with a modifying agent. Hence, when the epoxy crosslinking polymers utilized by Filippou et al to provided a cross-linked polymer network grafted to the surface of the substrate via the functional groups of the modifying agent, the grafted crosslinked epoxy polymer does in fact directly bond to the substrate considering the bonded modifying agent is bonded to the substrate surface and hence a part of the "substrate" as instantly claimed.

Filippou et al teach a process for modifying the surface of a substrate containing a polymeric material by contacting the surface with a modifying agent to bond the modifying agent to the surface wherein the process comprises providing a solution of the modifying agent in a solvent and subjecting the solution of the modifying agent to a zone of elevated temperature to vaporize the solvent and provide diffuse contact between the modifying agent and the surface of

the substrate wherein the functionality of the modifying agent is chosen to provide good adhesion to the substrate and surface chemical reactivity for subsequent reaction with other material brought into contact with the surface modified substrate, wherein the surface of the substrate is preferably oxidized and wherein the heating range includes temperatures that fall within the instantly claimed range (Abstract; Col. 2-3; Col. 5, lines 15-19; Col. 6, lines 13-67; Col. 10, lines 46-65; Col. 12.) Filippou et al further teach that the process includes treating the surface of the substrate with a crosslinking agent reactive with the substrate modifying agent to provide a cross-linked polymer network grafted to the surface of the substrate wherein the extent of crosslinking can be controlled to allow a certain portion of reactive groups to remain uncross-linked to provide bonding to paints or adhesives or allow reaction with another crosslinker (Col. 14, lines 45-Col. 15, line 9.) Filippou et al teach that the crosslinker may be an epoxy polymer comprising at least two oxirane groups such as polyglycidylmethacrylate and may be applied by conventional methods including dip coating, spin coating, and gravure coating (*which would produce crosslinking within the epoxy polymer layer*, Col. 17, lines 24-53; Col. 20.) Filippou et al further teach that the process provides a method to engineer on a polymeric surface a crosslinked surface containing highly reactive functional groups for multi-step surface coupling of molecules possessing specific physico-chemical properties wherein the suitable compounds for the multi step surface coupling include compounds containing various reactive groups include epoxy and (meth)acrylate groups and wherein the compounds may be macromolecules with molecular weights ranging from a few hundred to a few million and wherein biomolecules may also be coupled to the surface of the substrate (Col. 22; lines 1-52.) The coated substrate may further be subjected to elevated temperatures or dried accordingly (Col. 23 and 25;

Examples.) Hence, given the teachings of Filippou et al, one having ordinary skill in the art at the time of the invention would have been motivated to utilize a polymer comprising multiple epoxy groups and having a molecular weight within the instantly claimed range as the crosslinker to react with the surface modifying agent bound to the substrate surface and crosslink a portion of the epoxy groups so that the remaining epoxy groups can be further subjected to reaction with various other reactive compounds as desired based on the final end product as taught by Filippou et al. Though Filippou et al do not specifically teach the percentage of the epoxy groups that are reacted with the functional groups of the surface modifying agent and the percentage crosslinked, Filippou et al do teach that the ratio of the polyamine compound to the crosslinker may be 100:1 to 1:100 and that crosslinking can be controlled so that there may be functional groups remaining for multi step surface grafting wherein one having ordinary skill in the art at the time of the invention would have been motivated to utilize routine experimentation to determine the optimum percentage of epoxy groups to react with the surface modifying agent and to crosslink to provide the desired adhesion and graft properties for a particular end use.

Response to Arguments

4. Applicant's arguments filed 2/7/05 have been fully considered but they are not persuasive. The Applicant argues that Filippou et al do not teach that the epoxy polymer is directly bonded to the substrate however, as discussed above, the Examiner takes the position that the modified substrate taught by Filippou et al is equivalent to the instantly claimed "substrate [comprising] functional groups that are reactive with epoxy" considering the instant invention does not exclude adding the functional groups to the substrate surface via an initial reaction with a modifying agent. Hence, when the epoxy crosslinking polymers utilized by

Filippou et al to provided a cross-linked polymer network grafted to the surface of the substrate via the functional groups of the modifying agent, the grafted crosslinked epoxy polymer does in fact directly bond to the substrate considering the bonded modifying agent is bonded to the substrate surface and hence a part of the "substrate" as instantly claimed.

5. Applicant's arguments, filed 2/7/05 with respect to Afeyan et al have been fully considered and are persuasive. The rejection of claims 1 and 14-16 has been withdrawn.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monique R. Jackson
Primary Examiner
Technology Center 1700
May 13, 2005